SEQUENCE LISTING

<110> Molecular Partners AG
Binz, Hans Kaspar
Forrer, Patrik
Stumpp, Michael Tobias

<120> Modified binding proteins inhibiting the VEGF-A receptor interaction

<130> P384A

<150> EP10161685.2
<151> 2010-04-30

<160> 9

<170> PatentIn version 3.5

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<212> PRT
<213> Artificial

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Gly Ser Asp Leu Gly Lys Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln
1 5 10 15

Asp Asp Glu Val Arg Ile Leu Met Ala Asn Gly Ala Asp Val Asn Ala
20 25 30

Phe Asp Trp Met Gly Trp Thr Pro Leu His Leu Ala Ala His Glu Gly
35 40 45

His Leu Glu Ile Val Glu Val Leu Leu Lys Asn Gly Ala Asp Val Asn
50 55 60

Ala Thr Asp Val Ser Gly Tyr Thr Pro Leu His Leu Ala Ala Ala Asp
65 70 75 80

Gly His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp Val
85 90 95

Asn Thr Lys Asp Asn Thr Gly Trp Thr Pro Leu His Leu Ser Ala Asp
100 105 110

Leu Gly Arg Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp
115 120 125

Val Asn Ala Gln Asp Lys Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile
130 135 140

```
Asp Asn Gly Asn Glu Asp Leu Ala Glu Ile Leu Gln Lys Ala Ala Ser
145                 150                 155                 160

Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Glu
                165                 170                 175

Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu
            180                 185                 190

Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
        195                 200                 205

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr
    210                 215                 220

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro
225                 230                 235                 240

Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
                245                 250                 255

Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Ser Pro Ala
            260                 265                 270

Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Glu Ser Ala Thr Pro
        275                 280                 285

Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
    290                 295                 300

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Pro Ala
305                 310                 315                 320

Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser Glu
                325                 330                 335

Gly Ser Ala Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
            340                 345                 350

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr
        355                 360                 365

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro
    370                 375                 380

Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
385                 390                 395                 400

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr
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405 410 415

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro
420 425 430

Glu Ser Gly Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
435 440 445

Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Glu
450 455 460

Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly
465 470 475 480

Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
485 490 495

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr
500 505 510

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr Glu Pro Ser Glu
515 520 525

Gly Ser Ala Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
530 535 540

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Thr
545 550 555 560

Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr
565 570 575

Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
580 585 590

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro
595 600 605

Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro
610 615 620

Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
625 630 635 640

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr
645 650 655

Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu Ser Ala Thr Pro
660 665 670

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Glu Ser Gly Pro Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
        675                 680                 685

Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu Gly Ser Pro Ala
    690                 695                 700

Gly Ser Pro Thr Ser Thr Glu Glu Gly Thr Ser Glu Ser Ala Thr Pro
705                 710                 715                 720

Glu Ser Gly Pro Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
                725                 730                 735

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Glu Pro
            740                 745                 750

Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu Ser Ala Thr Pro
        755                 760                 765

Glu Ser Gly Pro Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro
    770                 775                 780

Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Thr
785                 790                 795                 800

Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Pro Ala Gly Ser Pro Thr
                805                 810                 815

Ser Thr Glu Glu Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
            820                 825                 830

Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Thr Ser Glu
        835                 840                 845

Ser Ala Thr Pro Glu Ser Gly Pro Gly Ser Pro Ala Gly Ser Pro Thr
    850                 855                 860

Ser Thr Glu Glu Gly Ser Pro Ala Gly Ser Pro Thr Ser Thr Glu Glu
865                 870                 875                 880

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Thr Ser Glu
                885                 890                 895

Ser Ala Thr Pro Glu Ser Gly Pro Gly Thr Ser Glu Ser Ala Thr Pro
            900                 905                 910

Glu Ser Gly Pro Gly Thr Ser Glu Ser Ala Thr Pro Glu Ser Gly Pro
        915                 920                 925
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Gly Ser Glu Pro Ala Thr Ser Gly Ser Glu Thr Pro Gly Ser Glu Pro
    930                 935                 940

Ala Thr Ser Gly Ser Glu Thr Pro Gly Ser Pro Ala Gly Ser Pro Thr
945                 950                 955                 960

Ser Thr Glu Glu Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro
                965                 970                 975

Gly Thr Ser Thr Glu Pro Ser Glu Gly Ser Ala Pro Gly Ser Glu Pro
            980                 985                 990

Ala Thr Ser Gly Ser Glu Thr Pro  Gly Thr Ser Glu Ser  Ala Thr Pro
        995                 1000                1005

Glu Ser  Gly Pro Gly Thr Ser  Thr Glu Pro Ser Glu  Gly Ser Ala
    1010                1015                1020

Pro Gly
    1025
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Gly Ser Asp Leu Gly Lys Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln
1               5                   10                  15

Asp Asp Glu Val Arg Ile Leu Met Ala Asn Gly Ala Asp Val Asn Ala
            20                  25                  30

Phe Asp Trp Met Gly Trp Thr Pro Leu His Leu Ala Ala His Glu Gly
        35                  40                  45

His Leu Glu Ile Val Glu Val Leu Leu Lys Asn Gly Ala Asp Val Asn
    50                  55                  60

Ala Thr Asp Val Ser Gly Tyr Thr Pro Leu His Leu Ala Ala Ala Asp
65                  70                  75                  80

Gly His Leu Glu Ile Val Glu Val Leu Leu Lys His Gly Ala Asp Val
                85                  90                  95

Asn Thr Lys Asp Asn Thr Gly Trp Thr Pro Leu His Leu Ser Ala Asp
            100                 105                 110
```

Leu Gly His Leu Glu Ile Val Glu Val Leu Leu Lys Asn Gly Ala Asp
115 120 125

Val Asn Ala Gln Asp Lys Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile
130 135 140

Asp Asn Gly Asn Glu Asp Leu Ala Glu Ile Leu Gln Lys Ala Ala Gly
145 150 155 160

Gly Gly Ser Gly Gly Gly Ser Cys
165

<210> 3
<211> 135
<212> PRT
<213> Artificial

<220>
<223> Ankyrin repeat protein

<400> 3

Gly Ser Asp Leu Asp Lys Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln
1 5 10 15

Asp Asp Glu Val Arg Ile Leu Met Ala Asn Gly Ala Asp Val Asn Ala
20 25 30

Arg Asp Ser Thr Gly Trp Thr Pro Leu His Leu Ala Ala Pro Trp Gly
35 40 45

His Pro Glu Ile Val Glu Val Leu Leu Lys Asn Gly Ala Asp Val Asn
50 55 60

Ala Ala Asp Phe Gln Gly Trp Thr Pro Leu His Leu Ala Ala Ala Val
65 70 75 80

Gly His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp Val
85 90 95

Asn Ala Gln Asp Lys Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile Asp
100 105 110

Asn Gly Asn Glu Asp Leu Ala Glu Ile Leu Gln Lys Ala Ala Gly Gly
115 120 125

Gly Ser Gly Gly Gly Ser Cys
130 135

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<212> PRT
<213> Artificial

<220>
<223> Ankyrin repeat protein

<400> 4

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Gly Ser Asp Leu Gly Lys Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln
1               5                  10                  15

Asp Asp Glu Val Arg Ile Leu Met Ala Asn Gly Ala Asp Val Asn Thr
            20                  25                  30

Ala Asp Ser Thr Gly Trp Thr Pro Leu His Leu Ala Val Pro Trp Gly
        35                  40                  45

His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp Val Asn
    50                  55                  60

Ala Lys Asp Phe Gln Gly Trp Thr Pro Leu His Leu Ala Ala Ala Ile
65                  70                  75                  80

Gly His Gln Glu Ile Val Glu Val Leu Leu Lys Asn Gly Ala Asp Val
                85                  90                  95

Asn Ala Gln Asp Lys Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile Asp
            100                 105                 110

Asn Gly Asn Glu Asp Leu Ala Glu Ile Leu Gln Lys Ala Ala Gly Ser
        115                 120                 125

Gly Ser Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro
    130                 135                 140

Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser
145                 150                 155                 160

Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro
                165                 170                 175

Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser
            180                 185                 190

Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala
        195                 200                 205

Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro
    210                 215                 220
```

```
Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser
225                 230                 235                 240

Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro
                245                 250                 255

Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser
            260                 265                 270

Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala
        275                 280                 285

Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro
    290                 295                 300

Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser
305                 310                 315                 320

Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro
                325                 330                 335

Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser
            340                 345                 350

Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala
        355                 360                 365

Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro
    370                 375                 380

Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser
385                 390                 395                 400

Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro
                405                 410                 415

Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser
            420                 425                 430

Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala
        435                 440                 445

Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro
    450                 455                 460

Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser
465                 470                 475                 480

Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser Pro Ala Ala Pro
```

485 490 495

Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala Pro Ala Ala Ser
500 505 510

Pro Ala Ala Pro Ala Pro Ala Ser Pro Ala Ala Pro Ala Pro Ser Ala
515 520 525

Pro Ala Ala Ser Pro Ala Ala Pro Ala Pro Ala Ser
530 535 540

<210> 5
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<220>
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Asp Asp Glu Val Arg Ile Leu Met Ala Asp Gly Ala Asp Val Asn Ala
20 25 30

Ser Asp Phe Lys Gly Asp Thr Pro Leu His Leu Ala Ala Ser Gln Gly
35 40 45

His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp Val Asn
50 55 60

Ala Tyr Asp Met Leu Gly Trp Thr Pro Leu His Leu Ala Ala Asp Leu
65 70 75 80

Gly His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp Val
85 90 95

Asn Ala Gln Asp Arg Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile Asp
100 105 110

Asn Gly Asn Glu Asp Leu Ala Glu Ile Leu Gln Lys Ala Ala Gly Ser
115 120 125

Pro Ser Thr Ala Asp Gly Cys
130 135

<210> 6
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<212> PRT
<213> Artificial

<220>
<223> Ankyrin repeat protein

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Gly Ser Asp Leu Gly Lys Lys Leu Leu Glu Ala Val Arg Ala Gly Gln
1               5                  10                  15

Asp Asp Glu Val Arg Ile Leu Met Thr Asn Gly Ala Asp Val Asn Ala
            20                  25                  30

Lys Asp Gln Phe Gly Phe Thr Pro Leu Gln Leu Ala Ala Tyr Asn Gly
        35                  40                  45

His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp Val Asn
    50                  55                  60

Ala Phe Asp Ile Phe Gly Trp Thr Pro Leu His Leu Ala Ala Asp Leu
65                  70                  75                  80

Gly His Leu Glu Ile Val Glu Val Leu Leu Lys Asn Gly Ala Asp Val
                85                  90                  95

Asn Ala Gln Asp Lys Phe Gly Arg Thr Ala Phe Asp Ile Ser Ile Asp
            100                 105                 110

Asn Gly Asn Glu Asp Leu Ala Glu Ile Leu Gln Lys Ala Ala Ser Gly
        115                 120                 125

Ser Cys
    130
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<210> 7
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<212> PRT
<213> Artificial

<220>
<223> Ankyrin repeat protein

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Gly Ser Asp Leu Gly Lys Lys Leu Leu Glu Ala Ala Arg Ala Gly Gln
1               5                  10                  15

Asp Asp Glu Val Arg Ile Leu Met Ala Asn Gly Ala Asp Val Asn Ala
            20                  25                  30

Val Asp Tyr Ile Gly Trp Thr Pro Leu His Leu Ala Ala Ala Tyr Gly
        35                  40                  45

His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Ser Ala Asp Val Asn
```

50 55 60

Ala Glu Asp Phe Ala Gly Tyr Thr Pro Leu His Leu Ala Ala Ser Asn
65 70 75 80

Gly His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp Val
85 90 95

Asn Thr Lys Asp Asn Thr Gly Trp Thr Pro Leu His Leu Ser Ala Asp
100 105 110

Leu Gly His Leu Glu Ile Val Glu Val Leu Leu Lys Tyr Gly Ala Asp
115 120 125

Val Asn Thr Gln Asp Lys Phe Gly Lys Thr Ala Phe Asp Ile Ser Ile
130 135 140

Asp Asn Gly Asn Glu Asp Leu Ala Glu Ile Leu Gln Lys Ala Ala Gly
145 150 155 160

Ser Pro Ser Thr Ala Asp Gly Cys
165

<210> 8
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<223> Polypeptide linker

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Gly Gly Gly Ser Gly Gly Gly Ser Cys
1 5

<210> 9
<211> 9
<212> PRT
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<223> Polypeptide linker

<400> 9

Gly Ser Pro Ser Thr Ala Asp Gly Cys
1 5